

LISTING OF THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-5 (Canceled)

Claim 6 (Previously Presented)

A parts mounting apparatus for positioning and mounting a first part and a second part, said apparatus comprising:

- a suction head, having a head reference mark which can be observed from above, for suctioning said first part at a lower end portion of said suction head;

- a stage, having a stage reference mark which can be observed from below, for holding a second part at an upper end portion of said stage;

- a driving mechanism for relatively moving said suction head and said stage in X, Y, Z, and θ directions;

- a first optical system for taking images of said second part held by the stage, and said head reference mark, from above said suction head;

- a second optical system, disposed so as to generally face said first optical system with the optical axis thereof aligned with the optical axis of said first optical system, for taking images of said first part suctioned to said suction head, and said stage reference mark, from below said stage;

- a computation device for calculating the relative position between said first part and said suction head, and the relative position between said second part and said stage, based upon image information from said first and second optical systems; and

- a control device for performing positional correction for said suction head and said stage so that the positions of said first part and said second part satisfy a predetermined relation based upon said positional information and said relative positional information from said first and second optical systems detecting said head reference mark, and stage reference mark with said suction head and stage being positioned at the mounting position.

Claim 7 (Previously Presented)

A parts mounting apparatus according to Claim 6, further comprising a positioning arrangement for continuously holding said first optical system and said second optical system in a fixed relation, at least when said images are taken and at least until said suction head and stage are at said mounting position.

Claim 8 (Previously Presented)

A parts mounting apparatus according to Claim 6, wherein

at least one of said suction head and said stage includes a part-suction opening; a hollow portion provided behind a back side of said part-suction opening and communicating with said part-suction opening; a transparent member, which closes the end opposite said part-suction opening of said hollow portion, whereby the part-suction opening can be observed from the back side through said transparent member; and an air suction path connected to said hollow portion, and

wherein at least one of said first optical system and said second optical system detects said part-suction opening as said head reference mark or said stage reference mark through said transparent member.

Claim 9 (Previously Presented)

A parts mounting apparatus according to Claim 8, wherein a heater is fixed near said part-suction opening.

Claim 10 (Previously Presented)

A parts mounting apparatus according to Claim 8, wherein the back side of said suction head or said stage is mounted to said driving mechanism by a bracket including a hollow portion, whereby said first or second optical system can be inserted for taking images of said part-suction opening through said transparent member.